

**Remarks**

Claims 1-100 are pending in the present application wherein claims 1-68 have been withdrawn and claims 69-100 stand rejected. Applicant gratefully acknowledges the interview granted by the Examiner to the undersigned Attorney for the Applicant on June 29, 2006. Applicant also gratefully acknowledges receipt of the Interview Summary received by Fax on July 7, 2006. Applicant wishes to clarify here that although not mentioned in the Interview Summary, the Stucky reference was discussed in the interview and that the Examiner agreed that the proposed amendment of claim 69 adding the chemical blowing agent would overcome Stucky and the rejections as more fully described below.

**Claim Rejections-35 USC §102**

Claims 68 and 78-88 are rejected under 35 USC §102(b) as being anticipated by Small, U.S. 4,372,002. As discussed in the interview Applicant has assumed that paragraph 3 of the Detailed Action which recites this rejection contained a typographical error in that 68 was meant to be 69. Claim 68 was previously withdrawn. The Examiner concurred and acknowledged the typographical error. Claim 69 has been amended to include the blowing agent from claim 70 therefore rendering this rejection of claim 69 and dependent claims 78-88 moot.

**Claim Rejections-35 USC §103**

Claims 69 and 78-100 are rejected under 35 USC §103(a) as being unpatentable over Spehner, US patent number 5, 232, 779. Claim 69 has been amended to include the blowing agent from claim 70 therefore rendering this rejection of claim 69 and dependent claims 78-100 moot.

Claims 69-77 are rejected under 35 USC §103(a) as being unpatentable over Spehner in view of Stucky et al., US patent number 6, 344, 268. The Examiner asserts that Spehner

discloses plant fibers such as bast, flax, hemp, jute and cotton that can be incorporated into a matrix as per claims 69 and 78-84. Additionally, the Examiner asserts that Spehner discloses fibers being impregnated with a solution comprising a carbonate, binding agent and an oxidizing agent such as synthetic elastomers, phenolic resins, resols, melanie resins or epoxy resins as per claims 75-77. The Examiner correctly indicated that Spehner does not teach the use of a blowing agent and proceeds to rely upon Stucky for a teaching of the blowing agent concluding that it would have been obvious to one of ordinary skill in the art to add a chemical blowing agent to the suspension in order to reduce the density and weight of the suspension when it is incorporated into the fiber.

Claim 69 requires, *inter alia*, a suspension drawn into the lumen to benefitiate the fiber whereby the natural voids of the lumen are preserved by the suspension. In contradistinction, Spehner does not teach nor suggest the problem sought to be addressed by the claimed invention nor does it teach nor suggest the solution to the problem. A problem with the prior art as described in the present application on page 2 beginning at line 14 is that during extrusion, the lumen of the fiber collapses under compressive pressure. When the lumen collapses, the natural voids in the fiber are lost causing the natural density of the fiber to increase. Because the density of the fiber is increased, the mass of the composite also increases. This increased density runs counter to the advantages of using fiber, which is mass reduction and stiffness enhancement. The claimed invention provides a beneficiated fiber wherein the lumen is preserved or in other words, does not collapse during extrusion causing the fiber to maintain natural density and strength characteristics.

Spehner does not suggest any problem with collapsing lumen. It therefore does not suggest any solution whereby the natural voids of the lumen are preserved by a suspension being drawn into the lumen as required by claim 69. Spehner simply seeks to produce a substitute

material for asbestos by treating plant fibers with an aqueous solution of a metal compound.

Nowhere does Spehner suggest an aqueous solution drawn into lumen of the fiber which is capable of preserving the natural voids of the lumen. The Examiner contends in the Response to Arguments that “Applicant does not claim that the lumen does not collapse” Applicant respectfully disagrees and contends in response, that claim 69 clearly requires preservation of the lumen.

Although the Examiner asserts that Spehner discloses fibers being impregnated with a solution comprising a carbonate, binding agent and an oxidizing agent such as synthetic elastomers, phenolic resins, resols, melanie resins or epoxy resins as per claims 75-77, the Spehner reference, for the reasons discussed above, does not teach nor suggest the limitations recited in claim 69 from which these claims depend.

Applicant furthermore asserts that there is no suggestion to combine Stucky with Spehner and furthermore asserts that such a combination, even if forced, would not result in the invention claimed in claim 69. Claim 69 requires a suspension which includes a chemical blowing agent, which is drawn into the lumen of a fiber whereby the natural voids of the lumen are preserved by the suspension. Neither of these references teaches nor suggest preservation of the natural voids of the lumen. In fact, Stucky teaches away from preserving the natural voids of the lumen since it teaches a process which is similar to that discussed in the background of the invention beginning on page 1 at line 24 which is quoted as follows:

The manufacture of the composite typically involves extruding of the polymeric material and the fiber. During the manufacture thereof, an extruder melts the polymeric material and mixes the melted polymeric material with the fiber. As a result of the mixing, the melted polymeric material becomes imbedded with the fiber. A bonding agent may be added to the mixture to aid

in achieving an adhesive bond between the fiber and the polymeric material. Many other “additives” may be introduced, such as, stabilizers, antioxidants, UV absorbers, fillers and extenders, pigments, process aids and lubricants, impact modifiers, bactericides and other materials that enhance physical and/or chemical properties as well as processing. A chemical blowing agent or gas may also be introduced into the mixture. While in the extruder, the blowing agent decomposes, disbursing a gas, such as, nitrogen or carbon dioxide, into the melted polymeric material. After the polymeric material, fiber and other additives are mixed, the melted mixture exits the extruder through a die. As the polymeric material exits the die, the extrusion pressure is reduced to atmosphere and the polymeric material begins to cool causing the entrained gases to expand as bubbles within the melted mixture. The bubbles are trapped by the surrounding polymeric material and form voids in the composite. These voids reduce the overall density and weight of the composite.

Often during extrusion, the lumen in the fiber collapses under compressive pressure. When the lumen collapses the natural voids in the fiber are lost causing the natural density of the fiber to increase.

The chemical blowing agent disclosed by Stucky is used precisely as described in the background as an additive to a polymeric material and fiber mixture in an extrusion process and therefore has the problems discussed in the background. The result being bubbles trapped by surrounding polymeric material to form voids in the composite not in the fiber. In the process disclosed by Stucky, the chemical blowing agent is mixed into the compound during blending or at the feed throat of the extruder resulting in bubbles trapped by surrounding polymer as disclosed in column 5 lines 24-30. Nowhere does Stucky or Spehner teach or suggest that the

chemical blowing agent enters or is drawn into the lumen to preserve the voids therein. It was agreed in the Interview that there is no suggestion in the references cited to arrive at the claim limitations of claim 69 with the addition of the chemical blowing agent. Reconsideration and withdrawal of the rejection of claims 69-77 is therefore respectfully requested. If upon reconsideration, the Examiner changes her position with respect to this rejection, she is requested to contact the undersigned Attorney for the Applicant in order to expedite prosecution of this application.

Finally, it is noted here that amendment to claim 72 was necessitated by the amendment to claim 69.

**Conclusion**

For the reasons discussed here, the Applicant contends that the application is in condition for allowance and passage thereof to issue is respectfully requested. If the Examiner wishes to discuss anything presented here in order to further prosecution of the present application, she is invited to contact the undersigned Attorney for the Applicant. Please charge any additional fees associated with this Preliminary Amendment to Deposit Order Account No. 50-1581.

Respectfully submitted,

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Dated: July 22, 2006

PTO Customer No.: 29450